Lesson Plan

( Engineering Physics – I )

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| L. No. | Content | Remark |
| 1 | Unit – I : Relativistic Mechanics  Introduction |  |
| 2 | Inertial & non-inertial frames |  |
| 3 | Galilean transformations, Concept of ether |  |
| 4 | Michelson-Morley experiment |  |
| 5 | Explanation of negative result of M M exp. Einstein’s postulates, |  |
| 6 | Lorentz transformation equations |  |
| 7 | Length contraction & Time dilation |  |
| 8 | Numerical on Length contraction & Time dilation |  |
| 9 | Relativistic addition of velocities with numerical. |  |
| 10 | Variation of mass with velocity with numerical. |  |
| 11 | Mass energy equivalence with numerical. |  |
| 12 | Concept of rest mass of photon with numerical. |  |
| 13 | Unit – II : Modern Physics Introduction. |  |
| 14 | Black body radiation spectrum, |  |
| 15 | Wien’s law and Rayleigh-Jeans law |  |
| 16 | Assumption of quantum theory of radiation, Planck’s law |  |
| 17 | Wave-particle duality, de-Broglie matter waves |  |
| 18 | Numerical on Wave-particle duality, de-Broglie matter waves |  |
| 19 | Bohr’s quantization rule, Phase and Group velocities |  |
| 20 | Davisson-Germer experiment |  |
| 21 | Heisenberg uncertainty principle and its applications, |  |
| 22 | Numerical on Heisenberg uncertainty principle and its applications, |  |
| 23 | Wave function and its significance, |  |
| 24 | Schrödinger’s wave equation ( Time dependent and time independent) |  |
| 25 | particle in one dimensional potential box, |  |
| 26 | Eigen values and Eigen function. |  |
| 27 | Common Numerical |  |
| 28 | **Unit – III:** Wave Optics:  Introduction Interference, Theory of interference. |  |
| 29 | Coherent sources Theory of interference fringes. |  |
| 30 | Interference in thin parallel films due to reflected light and transmitted light. |  |
| 31 | Interference in thin films due to wedge shaped film and numerical |  |
| 32 | Newton’s rings |  |
| 33 | Newton’s rings applications |  |
| 34 | Numerical on Newton’s rings |  |
| 35 | Introduction Diffraction and its type |  |
| 36 | Diffraction due to single slit |  |
| 37 | Diffraction due to double slit & missing order |  |
| 38 | Diffraction due to N- slit |  |
| 39 | Diffraction grating, Grating spectra |  |
| 40 | dispersive power with numerical on Diffraction grating, Grating spectra and dispersive power |  |
| 41 | Rayleigh’s criterion and resolving power of grating |  |
| 42 | Numerical on resolving power of grating |  |
| 43 | **Unit – IV:** Polarization and Laser: Introduction of Polarization. |  |
| 44 | Phenomena of double refraction, Nicol prism |  |
| 45 | Production and analysis of plane, circular and elliptical polarized light |  |
| 46 | Retardation Plate. Optical Activity. |  |
| 47 | Fresnel’s theory, Specific rotation. |  |
| 48 | Introduction of Laser ( Fundamental cocept) Spontaneous and stimulated emission of radiation |  |
| 49 | population inversion, Einstein’s Coefficients, |  |
| 50 | Concept of 3 and 4 level Laser |  |
| 51 | Construction and working of Ruby, He-Ne lasers |  |
| 52 | laser applications |  |
| 53 | **Unit – V:** Fiber Optics and Holography: Introduction of Optical fiber ie. Fundamental idea and its Propagation mechanism. |  |
| 54 | Acceptance angle and cone, Numerical aperture |  |
| 55 | Single and Multi Mode Fibers |  |
| 56 | Dispersion and Attenuation |  |
| 57 | Introduction of holography Basic Principle of Holography, |  |
| 58 | Construction and reconstruction of Image on hologram and applications of holography. |  |

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